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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CORSARO, NICK	
ART UNIT	**PAPER NUMBER**
2684	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/805,233	Applicant(s) FENG ET AL.	
	Examiner Nick Corsaro	Art Unit 2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Preliminary Amendment

1. The preliminary amendment filed 03/13/2001 has been received an placed or record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "BINAURAL SIGNAL PROCESSING USING MULIPTLE ACOUSTIC SENSORS AND DIGITAL FILTERING".

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-11, 13-17, 26-28, 31-34, and 41, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellerman et al. (5,602,962) in view of Elko et al. (4,802,227).

Consider claim 1, Kellerman discloses providing a first signal from a first acoustic sensor and a second signal from a second acoustic sensor spaced apart from the first acoustic sensor (abstract lines 1-4, col. 5 lines 52-55, and col. 3 lines 1-17). Kellerman discloses the first signal and the second signal each corresponding to two or more acoustic sources, said acoustic sources including a plurality of interfering sources and a desired source (see col. 3 lines 1-17). Kellerman discloses area orienting the interfering, sources from the first and second signals to

provide a corresponding number of interfering source signals each corresponding to a different one of the interfering sources and each including a plurality of frequency components the components each corresponding to a different frequency (see col. 3 lines 45-54, col. 3 lines 39-45, col. 1 lines 20-37, col. 4 lines 60-67, col. 5 lines 1-30, and col. 4 lines 10-35, where Kellerman discusses the noise associated with each microphone and location are processed). Kellerman discloses suppressing one or more different frequency components of each of the interfering source signals to reduce noise (see col. 3 lines 45-67, col. 4 lines 55-67, and col. 5 lines 1-30).

Kellerman disclose area orienting the interfering sources (col. 3 lines 42-44, col. 1 lines 28-33, and col. 3 lines 35-67), said area orienting logically being localizing, however, Kellerman does not specifically disclose localizing. Elko teaches localizing (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and localize, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claim 9, Kellerman discloses a system (see col. 3 lines 1-5). Kellerman discloses a pair of spaced apart acoustic sensors each arranged to detect two or more differently located acoustic sources and correspondingly generate a pair of input signals, said acoustic sources including a desired source and a plurality of interfering sources (see col. 1 lines 15-37, and col. 3 lines 1-17). Kellerman discloses a delay operator responsive to said input signals to generate a number of delayed signals therefrom (see col. 3 lines 17-25). Kellerman discloses a

an area orienting operator responsive to said delayed signals to area oriented said interfering sources relative to location of said sensors and provide a plurality of interfering source signals each representative of a corresponding one of said interfering sources (see col. 3 lines 45-54, col. 3 lines 39-45, col. 1 lines 20-37, col. 4 lines 60-67, col. 5 lines 1-30, and col. 4 lines 10-35 where Kellerman discusses the noise associated with each microphone and location are processed). Kellerman discloses interfering source signals each being represented in terms of a plurality of frequency components, said components each corresponding to a different frequency (see col. 3 lines 45-54, col. 3 lines 39-45, col. 1 lines 20-37, col. 4 lines 60-67, and col. 5 lines 1-30). Kellerman discloses an extraction operator responsive to said interfering source signals to suppress at least one of said frequency components of each of said interfering source signals and extract a desired signal corresponding to said desired source, said at least one of said frequency components being different for each of said interfering source signals (see col. 3 lines 35-67, col. 1 lines 15-37, col. 4 lines 63-67, col. 5 lines 1-24, and col. 4 lines 10-35). Kellerman discloses an output device responsive to said desired signal to provide an output corresponding to said desired source (see col. 5 lines 3-50).

Kellerman disclose area orienting operator responsive to the signals (col. 3 lines 42-44, col. 1 lines 28-33, and col. 3 lines 35-67), said area orienting operator logically being localizing, however, Kellerman does not specifically disclose a localizing operator. Elko teaches a localizing operator (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and have localizing operator, as taught by Elko,

thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67)

Consider claim 17, Kellerman discloses a method (see col. 3 lines 1-5). Kellerman discloses positioning a first acoustic sensor and a second acoustic sensor to detect a plurality of differently located acoustic sources (see col. 1 lines 15-37, and col. 3 lines 1-17). Kellerman discloses generating a first signal corresponding to said sources with said first sensor and a second signal corresponding to said sources with said second sensor (see col. 1 lines 15-37, and col. 3 lines 1-17). Kellerman discloses providing a number of delayed signal pairs from the first and second signals, the delayed signal pairs each corresponding to one of a number of positions relative to the first and second sensors (see col. 3 lines 17-35). Kellerman discloses area orienting the sources as a function of the delayed signal pairs and a number of coincidence patterns, the patterns each corresponding to one of the positions (see col. 3 lines 25-61). Kellerman discloses establishing, an expected variation of acoustic source position information with frequency attributable to a source at the one of the positions (see col. 3 lines 25-67, col. 4 lines 55-67, col. 5 lines , and col. 4 lines 10-35).

Kellerman disclose area orienting as a function of the signals (col. 3 lines 42-44, col. 1 lines 28-33, and col. 3 lines 35-67), said area orienting logically being localizing, however, Kellerman does not specifically disclose a localizing. Elko teaches a localizing (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and have localizing, as taught by Elko, thus

allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claim 26, Kellerman discloses a system (see col. 3 lines 1-5). Kellerman discloses a pair of spaced apart acoustic sensors each configured to generate a corresponding one of a pair of inputs signals, the signals being representative of a number of differently located acoustic sources (see col. 1 lines 15-37, and col. 3 lines 1-17). Kellerman discloses a delay operator responsive to said input signals to generate a number of delayed signals each corresponding to one of a number of positions relative to said sensors (see col. 3 lines 17-25). Kellerman discloses an area orienting operator responsive to said delayed signals to determine a number of sound source area signals from said delayed signals and a number of coincidence patterns, said patterns each corresponding to one of said positions and relating frequency varying sound source position information caused by ambiguous phase multiples to said one of said positions to improve sound source area optimization (see col. 3 lines 25-61, col. 1 lines 15-37 and col. 4 lines 10-35). Kellerman discloses an output device responsive to said are orienting signals to provide an output corresponding to at least one of said sources (see col. 3 lines 45-67, col. 4 lines 60-67, and col. 5 lines 3-50).

Kellerman disclose area orienting operator responsive to the signals (col. 3 lines 42-44, col. 1 lines 28-33, and col. 3 lines 35-67), said area orienting operator logically being localizing, however, Kellerman does not specifically disclose a localizing operator. Elko teaches a localizing operator (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and have localizing operator, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claim 32, Kellerman discloses a system (see col. 1 lines 5-12). Kellerman discloses a pair of spaced apart acoustic sensors each generating a corresponding one of a pair of inputs signals, the signals each being representative of a number of differently located sound sources (see col. 1 lines 15-36, col. 3 lines 40-45, col. 3 lines 1-25, and col. 5 lines 50-55). Kellerman discloses a signal processor responsive to said sensors (see col. 3 lines 2-5). Kellerman discloses said processor including a means for providing a number of delayed signals from said input signals, the delayed signals each corresponding to one of a number of positions relative to said first and second sensors (see col. 1 lines 29-33, col. 3 lines 40-45, and col. 3 lines 18-25). Kellerman discloses a means for area orienting each of said sound sources to one of said positions as a function of said delayed signals and a corresponding one of a number of patterns of frequency invariant data corresponding to one of said positions and frequency dependent data corresponding to at least two other of said positions (see col. 3 lines 25-67, col. 4 lines 1-67, and col. 5 lines 1-30). Kellerman discloses a means for suppressing a different frequency component of each of a selected number of said sources causing interference and for extracting a desired signal representative of one of said sources (see col. 3 lines 45-67, col. 4 lines 55-67, and col. 5 lines 1-30). Kellerman discloses an output device responsive to said desired signal to provide an output corresponding to said one of said sources (see col. 6 lines 25-65).

Kellerman disclose a means for area orienting as a function of the signals (col. 3 lines 42-44, col. 1 lines 28-33, and col. 3 lines 35-67), said area orienting logically being localizing, however, Kellerman does not specifically disclose a means for localizing. Elko teaches a means for localizing (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and have a means for localizing, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claim 34, Kellerman discloses a signal processing system (see col. 1 lines 5-12). Kellerman discloses a first sensor at a first location configured to provide a first signal corresponding to an acoustic signal, said acoustic signal including a desired signal emanating from a selected source and noise emanating from a noise source (see col. 5 lines 50-5, col. 3 lines 1-25, col. 3 lines 40-44, and col. 1 lines 15-37). Kellerman discloses a second sensor at a second location configured to provide a second signal corresponding to said acoustic signal (see col. 5 lines 50-5, col. 3 lines 1-25, col. 3 lines 40-44, and col. 1 lines 15-37). Kellerman discloses a signal processor responsive to said first and second signals to generate a discrete first spectral signal corresponding to said first signal and a discrete second spectral signal corresponding to said second signal, said processor being configured to delay said first and second spectral signals by a number of time intervals to generate a number of delayed first signals and a number of delayed second signals and provide a time increment signal, said time increment signal corresponding to area difference of the selected source from the noise source, and said processor

being further configured to generate an output signal as a function of said time increment signal (see col. 3 lines 1-67, col. 4 lines 1-67, and col. 5 lines 1-30). Kellerman discloses an output device responsive to said output signal to provide an output representative of said desired signal (see col. 5 lines 50-67, col. 6 lines 1-67, col. 4 lines 65-67, and col. 5 lines 1-10).

Kellerman disclose time increment corresponding to an area difference, (col. 3 lines 42-44, col. 1 lines 28-33, and col. 3 lines 35-67), said area difference logically being separation, however, Kellerman does not specifically disclose time increment corresponding to separation. Elko teaches time increment corresponding to separation (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and have time increment corresponding to separation, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claim 41, Kellerman discloses a method of signal processing (see col. 3 lines 1-5). Kellerman discloses positioning a first and second sensor relative to a first signal source, the first and second sensor being spaced apart from each other, and a second signal source being spaced apart from the first signal source (see col. 3 lines 40-45, col. 1 lines 15-37, col. 3 lines 1-25, and col. 5 lines 50-55). Kellerman discloses providing a first signal from the first sensor and a second signal from the second signal, the first and second signals each being representative of a composite acoustic signal including a desired signal from the first signal source and an unwanted signal from the second signal source (see col. 3 lines 18-45, col. 4 lines 60-67, col. 5 lines 1-30,

and col. 5 lines 50-67). Kellerman discloses establishing, a number of spectral signals from the first and second signals as a function of a number of frequencies, each of the spectral signals representing a different position relative to the first signal source; determining a member of the spectral signals representative of position of the second signal source; and generating an output signal from the member, the output signal being representative of spectral content of the first signal (see col. 1 lines 15-40, col. 3 lines 45-67, col. 4 lines 55-67, col. 5 lines 1-30, col. 3 lines 1-67, col. 4 lines 1-67, and col. 5 lines 1-67).

Kellerman discloses determining a member of the spectral signals representing the noise source, (col. 3 lines 42-44, col. 1 lines 28-33, and col. 3 lines 35-67), , however, Kellerman does not specifically disclose determining a spectral member representing position . Elko teaches determining a spectral member representing position (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, col. 5 lines 1-67, col. 7 lines 30-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and determining a spectral member representing position, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claims 2 and 3, Kellerman discloses suppressing includes extracting, a desired signal representative of the desired source (see col. 2 lines 1-20, col. 3 lines 1-67, and col. 4 lines 1-67).

Consider claim 4, Kellerman discloses area orienting (see col. 3 lines 1-67). Kellerman does not specifically disclose localizing. Elko teaches localizing (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and localize, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claims 5-8, Kellerman discloses using different lines and using transforms wherein the transforms are area oriented (see col. 4 lines 55-67 and col. 5 lines 1-50). Kellerman does not specifically disclose using different lines such localization corresponds to the transform. Elko teaches localizing (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and localize, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claim 10, Kellerman discloses area orienting with regard to patterns to determine transform components regarding noise, however does not specifically disclose localizing using the patterns. Elko teaches localizing the patterns (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and localize using the patterns, as taught by

Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claims 11 27, 28, and 31, the combination above discloses an analog-to-digital converter responsive to said input signals to convert each of said input signals from an analog form to a digital form; a first transformation stage responsive to said digital form of said input signals to transform said input signals from a time domain form to a frequency domain form in terms of a plurality of discrete frequencies, said delay operator including a dual delay line for each of the frequencies; a second transformation stage responsive to said desired signal to transform said desired signal from a digital frequency domain form to a digital time domain form; and a digital-to-analog converter responsive to said digital time domain form to convert said desired signal to an analog output form said output device.

Consider claims 13 and 14, Kellerman discloses choosing said desired signals as a function of said interfering signals (see col. 3 lines 1-67 and col. 4 lines 1-67).

Consider claims 15 and 16, Kellerman discloses a ratio of signals and propagation to select output signals (see col. 3 lines 1-67, and col. 5 lines 2-25). Kellerman does not specifically disclose a ratio of the difference in propagation measurements. Elko teaches a ratio of the difference in propagation measurements (see col. 4 lines 18-41, col. 3 lines 40-65, col. 5 lines 60-67, col. 6 lines 1-7, and col. 5 lines 1-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and have a ratio of the difference in propagation measurements, as taught by Elko, thus allowing improved directional sound capability where

noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

Consider claim 33, Kellerman does not specifically disclose the processor includes a means for adjusting said delayed signals with a head-related transfer-function. Elko teaches the processor includes a means for adjusting said delayed signals with a head-related transfer-function (see col. 3 lines 40-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman, and have the processor includes a means for adjusting said delayed signals with a head-related transfer-function, as taught by Elko, thus allowing improved directional sound capability where noise and sources change over relatively short time periods, as discussed by Elko (col. 2 lines 2-10, and col. 1 lines 10-67).

3. Claims 12, 18-24, 30, and 35-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellerman in view of Elko as applied to claims 1, 9, 17, 26, 32, 34, and 41, above, and further in view of Kaneda et al. (4,536,887).

Consider claims 12 and 30, Kellerman and Elko do not specifically discloses said delay operator, said localization operator, and said extraction operator are provided by a solid state signal processing device. Official notice is taken that both the concept and advantage of using solid-state circuits for the different operators in a circuit are well known and expected in the art for integrating discrete components and alleviating the need for moving parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman and Elko, and have said delay operator, said localization operator, and

said extraction operator are provided by a solid state signal processing device, thus allowing integration of the circuits into a compact package.

Consider claims 18-20, Kellerman and Elko disclose using reference signals applied for suggesting the signals (see Kellerman col. 6 lines 1-30 and Elko col. 4 lines 17-41). Kellerman and Elko do not specifically disclose a fictitious signal. Kaneda teaches using fictitious signals (see abstract lines 1-10, col. 1 lines 37-67, col. 3 lines 25-65, col. 4 lines 65-67, and col. 5 lines 1-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman and Elko, and use a fictitious signal, as taught by Kaneda , thus allowing adaptive selection of the desired signals, as discussed by Kaneda (col. 1 lines 5-35).

Consider claims 21-24, and 36-40, Kellerman and Elko disclose using reference signals applied for suggesting the signals to determine patterns via transforms and isolating or elimination noise to reduce the noise in particular area by localization to reduce noise (see Kellerman col. 6 lines 1-30 and Elko col. 4 lines 17-41). Kellerman and Elko do not specifically disclose using a fictitious signal for localizing in a particular area to reduce noise. Kaneda teaches using fictions signals (see abstract lines 1-10, col. 1 lines 37-67, col. 3 lines 25-65, col. 4 lines 65-67, and col. 5 lines 1-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman and Elko, and use a fictitious signal for localizing in a particular area to reduce noise, as taught by Kaneda , thus allowing adaptive selection of the desired signals, as discussed by Kaneda (col. 1 lines 5-35).

4. Claims 25, 29, and 42, 44, and 45, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellerman in vie of Elko as applied to claim 17 above, and further in view of Ross et al. (5,712,830).

Consider claims 25, 29, and 42, 44, and 45, Kellerman, discloses the method and system where signals are received and delayed by directional microphone system. Kellerman and Elko do not show azimuth. Ross teaches azimuth (see col. 4 lines 9-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman and Elko, and have azimuth, as taught by Ross, thus more accurate position of sound, as discussed by Ross (col. 1 lines 50-53).

5. Claims 35 and 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kellerman in view of Elko as applied to claim 41 above, and further in view of Kryter et al. (3,894,195).

Consider claims 35 and 42, Kellerman and Elko do not specifically disclose a hearing aid with speaker. Kryter teaches a hearing aid (see col. 1 lines 3-6, and col. 4 lines 45-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kellerman and Elko , and have a hearing aid, as taught by Kryter, thus allowing improvement of noise immunity, as discussed by Kryter (col. 3 lines 55-67) .

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(5,483,599), Zagorski teaches a dual microphone system.

Any inquiry concerning this communication should be directed to Nick Corsaro at telephone number (703) 306-5616.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung, can be reached at (703) 308-7745. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth, Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 customer Service Office whose telephone number is (703) 306-0377.

Nick Corsaro

Primary NICK CORSARO PATENT EXAMINER